

THE AUSTRALIAN PLANT DISEASE RECORDER.

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PLANT DISEASE NOTES.

CEREALS AND GRASSES.

SEPTORIA DISEASES OF WHEAT:

SPECKLED LEAF BLIGHT OF WHEAT.

Following on the wet winter, speckled leaf blight of wheat, Septoria tritici Rob., is very widespread throughout the N.S.W. wheat belt. No crop examined in a wide area west and north of Wagga (South Western Slopes) was found free of the disease. In most crops, lesions occurred on the uppermost leaves, and the lower leaves were completely blighted.

Although the writer isolated S. tritici from many specimens of wheat from the north-west of the State, and even from the Tablelands, in the 1949 season, it has been considered that damage by this pathogen is very slight in the northern part of the State. In August this year, however, the incidence of speckled leaf blight was high in crops in a wide area around Gunnedah (North Western Slopes) and large lesions with pycnidia occurred even on the uppermost flags. Samples of wheat from Tamworth (North Western Slopes), have also shown leaf lesions caused by S. tritici. Crops in the central-west were also affected.

In the South-western Slopes and Riverina districts Septoria tritici infection occurs every season.

GLUME BLOTCH OF WHEAT.

Although glume blotch of wheat, caused by Septoria nodorum Berk., does occur throughout the N.S.W. Wheat belt, the incidence is highest in the north-west, although even there, the disease is considered to be of minor importance. In the 1949 season, the main symptoms were the glume blotch and leaf lesions. Stem blotch (from which S. nodorum was isolated) occurred less frequently, and the severe "node-breaker" condition was comparatively rare.

In August 1950, in the north-west glume blotch was showing up in some volunteer and early plants on headlands, and fairly extensive leaf lesions were present in some crops. During September, odd plants were received with affected nodes, with and without pycnidia present.

RUST SURVEY:

Specimens of Lamarckia aurea and Poa annua have been received this season, with both leaf and stem rusts. Any further specimens that are forthcoming will be appreciated, because of the importance of these hosts in connection with the rust survey of cereals and grasses.

-- W. L. WATERHOUSE.

FIELD AND FODDER CROPS:LINSEED WILT:

Fusarium wilt has not, until this winter, been recorded from linseed in Queensland. In May of this year, wilted plants were noticed in a young crop of linseed (Walsh variety) at Westbrook on the Darling Downs. A species of Fusarium was isolated. The wilt was reproduced in seedlings which had been dipped in a water suspension of mycelium and spores of this fungus and Fusarium sp. reisolated. The disease was present to a slight extent only in the crop concerned and has not been seen in any crop subsequently inspected.

-- W. PONT.

VEGETABLES.HORMONE WEEDICIDE INJURY ON TOMATOES:

An unusual leaf condition was observed on recently-trellissed tomato plants (Grosse Lisse variety) growing at Somersby, N.S.W. Many petioles were twisted and the leaflets showed a marked thickening of the vascular bundles, so that at their bases these leaflets presented a spade-like appearance. A pronounced mottling occurred on the leaflets and the growth of green fruit was uneven. In some respects the condition was similar to the symptoms caused by the fern leaf virus. The condition was confined to one corner of the crop and did not appear to be spreading. However, the new growth on the affected plants continued to exhibit mild symptoms.

Six weeks earlier an area of blackberries about 50 feet away from the affected tomatoes had been sprayed with the hormone weedicide 2,4,5,T at the rate of 1 gallon per 100 gallons of

water. The grower stated that the spraying was carried out in calm weather and that the possibility of spray drift was most unlikely.

Subsequently, seedlings of the Grosse Lisse variety were raised and a number of young plants sprayed with 2,4,5.T. 1 gal./100 gal. water. Control plants were left unsprayed six feet away. The sprayed plants were killed and the controls developed marked twisting of the petioles and thickening of the veins similar to the condition observed in the field.

It seems therefore that tomato plants are susceptible to a volatile constituent of the 2,4,5.T. hormone weedicide.

- T.B.KIELY.

ONION SMUT:

Onion smut (Urocystis cepulae) was found during September among two plantings in the Adelaide area. This smut has not been recorded previously in South Australia, though one of the growers involved claimed to have known the disease for many years. In both gardens, which have carried onions continuously for many years, infections occur over a wide area but the percentage of infected plants is very low. The distribution suggests that the fungus has been established on these properties for some years but it now seems impossible to ascertain when and how it was introduced.

In the case of the grower who claimed to have known the disease for at least ten years, the number of infected plants was of the order of 1-2 per 10,000 and there was nothing to suggest that the stand had been affected appreciably by the death of very small seedlings. This incidence was much the same as that which the grower was accustomed to seeing, though he did think that his earliest plantings developed rather more smut than later ones. The disease had never caused him any concern.

In the case of the second grower, whose area of onions was much larger, any assessment of loss on account of onion smut was obscured by other features. The soil here is a heavy black clay and is extensively infested with the onion nematode, with the consequence that "bloat" is common. In this garden there were considerable patches carrying few or no onion plants. The grower himself attributed these poor patches to unfavourable weather when he was seeding, a view to which the difficult soil lends support. It is also likely that the onion nematode contributed.

Onion smut was much less easily found near these poor patches than in patches where the stand seemed to be unaffected. Indeed, when the first specimen was found, one naturally looked near these thin patches for further specimens but it was not until attention was given to the better patches that significant numbers of smutted plants were found.

It is interesting to note that the first record of onion smut in California was also made quite recently (Plant Dis. Reporter 33: 451, 1949).

- D. B. ADAM.

ONION ROOT ROT:

A root rot has been noted in onion crops on Black Earth soils in south-eastern Queensland this year. A clear picture of above ground symptoms of the trouble was not obtained because all affected crops seen were also infected with downy mildew. However, stunting with consequent failure to produce a marketable bulb seemed to be the most noticeable feature of the disease. Many of the roots on affected plants were rotted, the rot being accompanied by development of a pink pigment which in some cases extended to the basal portion of the bulb. Many isolations from affected roots have yielded, most consistently, a species of Fusarium. Elsewhere Pyrenochaeta terrestris has been found responsible for a pink root condition of onions. So far we have no evidence that this fungus is involved in the Queensland pink root disease.

- W. PONT.

BACTERIAL BLIGHT OF PEAS:

Bacterial blight of peas has not been recorded frequently in Tasmania, but this season several instances have been reported from the Launceston and Midlands areas. As in the past, it has only developed on early sown crops which have been subjected to frost.

- G. C. WADE.

RESISTANCE TO ANTHRACNOSE OF BROWN BEAUTY BEANS:

In the previous issue of this publication (A.P.D.R. 2: 3:32-34, 1950), it was reported that preliminary tests had shown some commercial lines of Brown Beauty to comprise a mixture of anthracnose-resistant and anthracnose-susceptible types. Further investigations using single plant progenies have confirmed this. It has been found that most of the commercial Brown Beauty lines in the New South Wales market contain about 50% resistant and 50% susceptible types, when tested with a strain of anthracnose which is thought to represent the strain most commonly occurring in this State. Another line contains only 10% resistant plants whilst a small quantity of Brown Beauty seed has been located, which, on tests so far carried out, contains 100% resistant types. Most of the Brown Beauty seed now grown in Victoria has been derived from New South Wales certified seed. Our records show that the first New South Wales certified seed used in Victoria in the 1945-46 season was the 10% resistant line, whilst subsequently in the 1947-48 season, some 50% resistant lines were used by East Gippsland seed growers.

During September of this year, a second strain of anthracnose has been obtained from anthracnose-affected Tweed Wonder plants in the Gosford district. In glasshouse inoculation tests, Tweed Wonder, Wellington Wonder (both resistant to the first strain) and all plants of Brown Beauty so far tested have proved susceptible to this second strain.

Despite the fact that Brown Beauty selections resistant to one strain of anthracnose are not also resistant to the second strain, a programme of building up supplies of strain 1-resistant seed of this variety has been initiated, as present information suggests that the second strain recently obtained from Tweed Wonder beans may have a somewhat restricted distribution in New South Wales.

R. D. WILSON.

FRUIT.THE CITRUS VIRUSES:

In addition to psorosis, three other important citrus virus diseases have been described, namely, quick decline or Tristeza of orange on seville stock, scaly butt or dwarfing of citrus on trifoliate stock and stunt bush or stem pitting of grapefruit, West Indian lime and other varieties.

No insect vector has yet been determined for scaly butt but the citrus aphid, Aphis citricidus, is a vector of the other two diseases.

A communication has recently been received from Dr. A.P. McClean of the Department of Agriculture, South Africa, which suggests that evidence is accumulating in South Africa, and in Brazil too, that tristeza, stem pitting and perhaps also scaly butt are all different manifestations of the same virus. Of interest, too, is the possibility that this universal virus, as far as South African citrus is concerned, may be important in another way by contributing to the premature decline of citrus in older orchards of 25 years or more.

Dr. McClean considers it odd that there should be two distinct viruses both transmitted by the same vector and both widespread, if not universal, in commercial citrus in Africa, and Dr. Costa of the Instituto Agronomico, Brazil, has indicated to him that he and his co-workers on tristeza in that country have formed the same opinion. This conclusion was prompted by the behaviour of certain test plants to the tristeza virus, the reaction being apparently identical with that recorded for the stem pitting virus, as, for example, the development of wood pitting in grapefruit and certain varieties of limes and a type of vein clearing in Aeglopsis Chevalieri very similar to the veinal flecking described by Dr. McClean for the stem-pitting virus in West Indian lime test plants. In both Africa and Brazil there are two strains of the virus, a mild and a severe one.

No special investigation on scaly butt has been carried out in South Africa but the disease is well known and regarded, as a result of observations on the behaviour of different rootstocks when budded to Washington Navel and Valencia, as merely the special manifestation of the virus in trifoliate stock. The virus has been found there to be present in almost all buds of Washington Navel and Valencia.

In connection with the above, it is of interest that the writer has in his home garden near Sydney, a tree of Ellendale mandarin on trifoliate stock which shows symptoms of stem pitting in the scion and scaly butt in the stock.

- C. J. MAGEE.

SPUR BLIGHT OF RASPBERRIES:

Spur blight, caused by Didymella applanata, was first detected in Tasmania in the autumn of 1949. However, it probably has been established here for a number of years, but overlooked because the most characteristic symptoms of the disease are only present during a relatively short period of the year.

During the past season a survey of raspberry diseases indicated that spur blight is more prevalent than was at first suspected and it is probably responsible for many reported cases of the failure of normal bud development, which were previously unexplained.

The disease affects the variety Antwerp more severely than Lloyd George. Loganberries are also subject to infection, though it appears to be less important on that host than on raspberries.

During the late autumn and early winter the symptoms consist of a tan discolouration of the bark surrounding the buds, and the basal buds are more commonly infected than terminal buds. In the winter and spring the affected area becomes greyish white in colour due to the separation of the outer layers of bark, and abundant pycnidia of the Phoma stage of the fungus develop. Later the fungus may spread extensively along the cane, and the affected areas become invaded by secondary organisms so that diagnosis is difficult and the disease may readily be overlooked. The perfect stage of the fungus has not yet been detected in Tasmania.

-- G. C. WADE.

ORNAMENTALS.LEAF SCORCH OF DAFFODILS:

Leaf scorch, Stagonospora curtisii, of daffodils, Narcissus pseudo-narcissus, was recently recorded for the first time in Queensland from a commercial planting at North Tamborine. It was reported to attack one un-named variety only.

-- K. N. SHEA.

MISCELLANEOUS PLANTS.

Uromycladium tepperianum (Sacc) McAlp. on Acacia decurrens Willd:

An extremely severe current season attack of rust was noted in early August on an old Acacia decurrens growing near the C.S.I.R.O. Laboratories, Canberra.

The tree bore many dead branches and carried a moderate load of typical perennial galls varying from 1 to 3 in. in diameter. The outstanding feature however was that over 90% of the young inflorescences were infected, the severity of attack varying from the presence of a few galls to the total destruction of flower buds. Over 60% of inflorescences showed replacement of all flower buds by gall tissue.

A virile healthy tree growing immediately adjacent to this specimen showed only a trace of floral infection although bearing an equally heavy load of perennial galls.

The writer is indebted to Professor W.L. Waterhouse, University of Sydney for identification of the Uromycladium concerned.

- J.H.E. MACKAY.

NEW DISEASE RECORDS AT BRISBANE:

Pathogenic fungi of fairly common occurrence in Brisbane during the winter of 1950, but not previously noticed, were Peronospora grisea (Ung.) De By. on Veronica plebeia, and Uromyces euphorbiae, Cke. et Peck, on Euphorbia prostrata. Accidium formosanum was collected on Emilia sonchifolia by Mrs. M.S. Clemens at Mount Fox, N.Q., in November, 1949.

Exobasidium vaccinii has made its appearance this spring on Azalea in Brisbane. It was previously recorded from one plant in Southport several years ago, and is therefore not a new record for Queensland. However, it was not found again until this abnormally wet year when it suddenly appeared in quantity in the Botanic Gardens and in some suburban gardens.

- D.A. HERBERT.

GENERAL AND MISCELLANEOUS NOTES.USE OF THE TERMS "RESISTANCE" AND "TOLERANCE":

In the last issue of this publication (A.P.D.R. 2: 3: 37, 1950), L. Stubbs uses the phrase "there may be considerable risk of losing resistance in virus tolerant varieties."

It is contended that the phrase does not convey any meaning in the light of what is believed to be the generally accepted usage of these terms. Surely "losing tolerance in virus tolerant varieties" was intended.

One is aware of the loose usage of these and similar terms in plant pathology, and during the last decade these terms have been defined both in U.S.A. and Great Britain (Phytopath. 30: 361-368, 1940, and Trans. Brit. Mycol. Soc. 33: 154, 1950).

The writer's interpretation of the meaning of these words is that a plant cannot have both resistance and tolerance. In resistant plants the pathogen or virus fails to establish itself even if it gains entry, such resistance being due to some physiological or anatomical character which is determined by the hereditary constitution of the plant. In tolerant plants, the pathogen or virus establishes itself after having gained entry, but its growth or development in the host plant fails to cause any significant observable symptom of disease.

A tolerant plant is a susceptible one, with regard to infection and compatibility, but it lacks the sensitivity of plants showing highly susceptible disease reaction. A plant may be susceptible and tolerant but not resistant and tolerant.

The views of other pathologists on this matter would be appreciated.

— N. H. WHITE.

COMMONWEALTH MYCOLOGICAL INSTITUTE NOTES.RESOLUTIONS OF THE 1950 C.A.B. REVIEW CONFERENCE:

Among the resolutions of the above Conference are the following in reference to C.M.I.:-

"17. The Conference recommends that the new building planned for the Commonwealth Mycological Institute be provided immediately, since the present accommodation is entirely inadequate even for the existing activities of the Institute; and the Conference further recommends that the Executive Council should seek immediate approval from Governments to the raising of a loan to cover the capital cost (not exceeding £55,000) of the new building and that the service of this loan (estimated at approximately £3,000 per annum) should be added to the Budget. It should, however, be open to any Government to make its contribution by way of a capital payment, and consequently a separate fund should be set up for the new Mycological Institute building. Annual contributions to this fund would not be made by Governments which pay a capital contribution.

18. The Conference recommends that, so far as financial provisions permit, the work of the Commonwealth Mycological Institute be expanded

- (a) by the preparation and issue of 'Mycological Broadsheets' on current topics of particular importance,
- (b) by the preparation of loose-leaf sheets giving descriptions of plant pathogenic fungi."

INDEX OF FUNGI:

Attention is drawn to the recent circular of C.M.I. regarding Dr. F. Petrak's List of Fungi for the period 1920-1939, which are now available or in preparation.

"For the determination of fungi and to avoid the introduction of unnecessary new names it is essential that the mycologist should be supplied with a complete list of species described and adequate host indexes. To meet this need the Commonwealth Mycological Institute has been listing since the beginning of 1940 all new species and varieties of fungi, new combinations, and new names in their semi-annual publication, the 'Index of Fungi' (formerly 'Supplements to the Review of Applied Mycology'). In addition, the Institute is now filling in the gap between Petrak's lists

published in earlier years and the 'Index', and hopes to maintain Petrak's lists in print. The publications referred to in the following pages indicate the progress that is being made in this direction. The species of fungi published up to 1920 were compiled in the 25 volumes of Saccardo's 'Sylloge fungorum' and constitute, with the lists mentioned above, a more or less complete record of all described species."

- C. J. MAGEE.

